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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,609	09/24/2003	Hiroshi Kanno	50024-019	1514
20277	7590	04/11/2005	EXAMINER	
MCDERMOTT WILL & EMERY LLP			MAI, ANH D	
600 13TH STREET, N.W.			ART UNIT	
WASHINGTON, DC 20005-3096			PAPER NUMBER	

2814

DATE MAILED: 04/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/668,609	KANNO ET AL.	
	Examiner	Art Unit	
	Anh D. Mai	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 March 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 11-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9/24/03; 6/17/04</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Election/Restrictions*

1. Claims 11-18 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on March 11, 2005.

### *Specification*

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested:

ORGANIC ELECTROLUMINESCENT DEVICE HAVING A THIN FILM  
FORMED BY PLASMA ON THE SURFACE OF THE HOLE INJECTING LAYER.

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Claim 3 recites: The organic electroluminescent device according to claim 1, wherein said thin film is formed of a material selected from the group consisting of carbon based material, silicon based material, silicon carbide based material and cadmium sulfide based material.

However, the high lighted materials do not have support from the specification.

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*Claim Objections*

4. Claim 1 objected to because of the following informalities:

Claim 1 recites: ...a thin film formed by plasma-treatment...

However, the specification, discloses that the thin film is formed by plasma deposit.

The two processes, plasma deposit and plasma-treatment, are completely different.

Appropriate correction is required.

*Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hung (U.S. Patent No. 6,208,077) of record.

With respect to claim 1, Hung teaches an organic electroluminescent device (200) substantially as claimed including:

hole injecting electrode (204), a hole injecting layer (2-6), a light emitting layer (214), and an electron injecting electrode (208) in this order. (See Fig. 2).

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Thus, Hung is shown to teach all the features of the claim with the exception of further includes a thin film on the surface of the hole injecting layer on the side of the light emitting layer.

However, in another device of Fig. 3, Hung teaches to enhance hole injection and improve operational stability of an organic EL device, an thin film is formed on the surface of the hole injecting electrode. This film can serve to improve the film formation property of subsequent organic layers and to facilitate injection of holes into the hole transporting layer resulting in increased luminance efficiency and operational stability of the EL device.

Note that, the anode (204) are well known in the art to be a hole injecting layer if no additional hole injecting layer is used.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to form a thin film on the hole injecting layer of the dive (200) as taught by the device (300) because without the thin film there is a hole injection barrier present at the interface between the CuPc and the hole transporting layer NPB and with the thin film between the hole injecting layer and the hole transporting layer the hole injection is enhanced and operational stability is improved.

Furthermore, it has been held that mere duplication of the essential working parts of a device, in the instant case an additional layer to perform a same function, involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Product by process limitation:

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The expression “a thin film formed by plasma-treatment” is/are taken to be a product by process limitation and is given no patentable weight. A product by process claim directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al.*, 218 USPQ 289, 292 (Fed. Cir. 1983); *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington*, 411 F.2d 1345, 1348, 162 USPQ 145, 147 (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir. 1935); and particularly *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product “gleaned” from the process steps, which must be determined in a “product by process” claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious product produced by a new method is not a patentable product, whether claimed in “product by process” claims or not.

**Note that Applicant has burden of proof in such cases** as the above case law makes clear.

With respect to claim 2, the thin film (306) of Hung is a non-crystalline material.

With respect to claim 3, the thin film (306) of Hung is formed of a material selected from the group consisting of carbon based material.

With respect to claims 4-6, the thin film (306) of Hung is formed of halide or carbon based halide or fluorocarbon (CF<sub>x</sub>).

With respect to claim 7, the hole injecting layer (206) of Hung is formed of a material selected from the group consisting of a phthalocyanine compound.

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With respect to claims 8 and 9, the thin film (306) of Hung has a thickness of 0.4-1 nm, thus overlaps the claimed range ( $5 \text{ \AA} \leq x \leq 50 \text{ \AA}$ ) or ( $5 \text{ \AA} \leq x \leq 12 \text{ \AA}$ ).

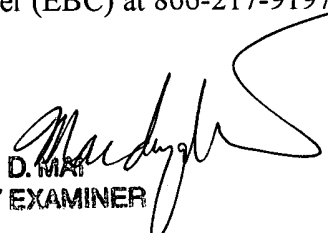
With respect to claim 10, the hole injecting layer (206) of Hung is formed of copper phthalocyanine (CuPc), and the thin film (306) is formed of fluorocarbon (CF<sub>x</sub>).

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh D. Mai whose telephone number is (571) 272-1710. The examiner can normally be reached on 9:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
ANH D. MAI  
PRIMARY EXAMINER

April 6, 2005